



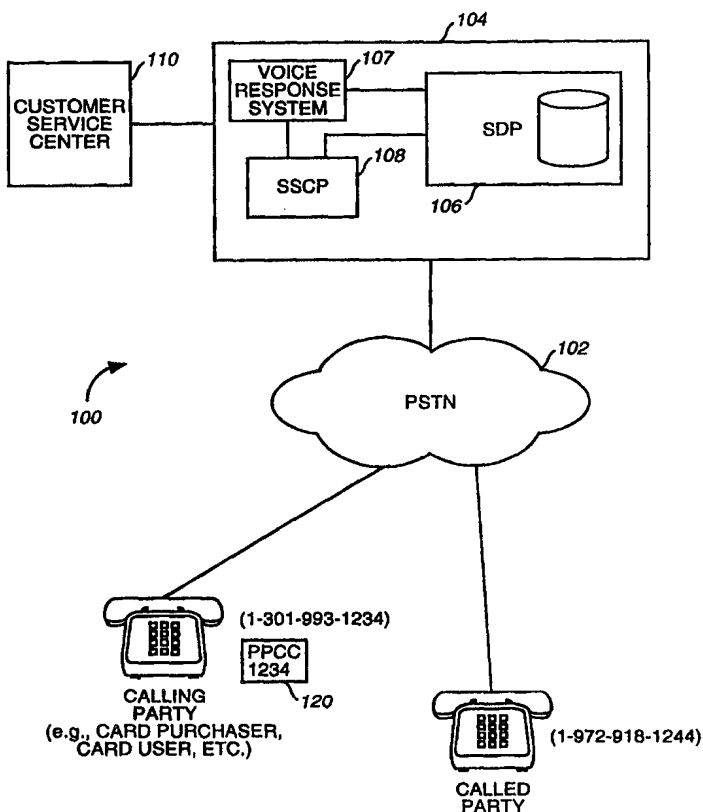
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(54) Title: DEDICATED SPEED-DIAL PRE-PAID TELEPHONE CALLING CARD

(57) Abstract

System and a method for pre-programming a list of speed dial telephone numbers associated with a dedicated speed-dialing pre-paid telephone calling card. The system includes a data storage area (106) for storing a card identifier, a list of speed dialing numbers and a security code for limiting access to the speed dialing list. If the security code stored in the database (106) is the same as that input by the caller (120) the card processing systems (104) allow those numbers to be dialed, changed or added to.



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DEDICATED SPEED-DIAL PRE-PAID TELEPHONE CALLING CARD

The present invention relates to systems and methods that are used to facilitate enhanced services that may be provided in relation to pre-paid telephone calling cards.

It is well known that pre-paid telephone calling cards have become widely used to obtain telephone calling services such as long distance calling services, etc.. For example, consumers can purchase pre-paid cards from retail stores and use the same to obtain access to telephone services to call friends and family all over the world. As such, many different kinds of pre-paid telephone calling cards are now available. Consumers can purchase pre-paid telephone calling cards having a variety of calling options (domestic calling options, international calling options, etc.) and a wide selection of pre-paid values. For example, consumers can purchase domestic-use pre-paid calling cards that are charged with 100 domestic call units (i.e., a unit is typically equal to one telephone service minute, but may be associated with some other amount of time - e.g., 50 seconds, etc.).

The appeal of pre-paid cards to consumers is due in large part to the fact that they often allow consumers to realize savings associated with making telephone calls. Additionally, people enjoy the use of pre-paid telephone calling cards because they do not require any other means to make a telephone call (e.g., a corresponding telephone line such as a home telephone as required with conventional telephone calling cards, money, etc.,). Pre-paid telephone calling cards often allow consumers to avoid the costs

associated with using a conventional telephone calling card that is associated with a particular telephone line (e.g., an access call service charge that is added to other toll-call rates and charges). As a result of their appeal, many retailers have begun to offer and sell pre-paid cards. And, since a relatively large selection of pre-paid telephone calling cards can be stocked and displayed without requiring significant retail floor space, retailers can enjoy maximized revenues relative to small sections of their leased or owned storefronts.

Despite the appeal of pre-paid cards to both consumers and retailers, pre-paid telephone calling cards are not without their problems. For example, the widespread appeal of pre-paid telephone calling cards has created serious problems for providers of pre-paid cards and related telephone services. In particular, providers of pre-paid telephone calling cards have been forced to distinguish their products in order to effectively compete. To date, the only effective way to distinguish one's prepaid telephone calling cards has been to continuously lower telephone service rates to the point of extremely thin or negative margins. And, unfortunately, pre-paid cards that promise the "lowest" telephone service rates often are not sufficient to capture and retain pre-paid card customers.

Another problem associated with pre-paid telephone calling cards is their susceptibility to fraudulent and wrongful use. For example, once a pre-paid telephone calling card has been activated, it may be used by simply dialing an access telephone number, and entering a card identifier which is often printed on the card. If a pre-paid telephone calling card is

provided to a child by a parent, for example, to be used in emergency or critical call situations, the child may use and deplete pre-paid telephone service time (such as during unauthorized telephone calls to friends, etc.) instead of using the card for its intended emergency purpose.

Thus, there exists a need to provide systems and methods that will allow providers of pre-paid telephone calling cards to offer enhanced services in relation to their pre-paid cards without requiring providers to lower their telephone service rates to unreasonable levels, and which will allow consumers to set or pre-program calling restrictions such as by establishing pre-programmed speed-dial only telephone numbers for use with a pre-paid telephone calling card. To be viable, such systems and methods must allow users of pre-paid cards to easily take advantage of such enhanced services while, at the same time, using pre-paid cards to obtain telephone calling services.

The present invention solves the above-described problems associated with prior pre-paid telephone calling cards by providing systems and methods that facilitate the provisioning, processing, and use of enhanced services.

By providing such systems and methods, providers of pre-paid telephone calling cards (hereinafter "pre-paid cards") will be able to effectively compete in the pre-paid card marketplace by offering better, more feature-rich services on which consumers will come to enjoy and rely. In particular, such systems and methods may be used to provide enhanced services to card purchasers who wish to acquire a pre-paid card that may only be used with a dedicated set of speed-dial numbers (such as numbers

corresponding to a home number, a cellular number, a pager number, etc.). A parent, for example, may pre-program such a dedicated speed-dial type pre-paid card with a specific list of contact numbers (e.g.,
5 emergency contact numbers). Once programmed with dedicated speed-dial telephone numbers, the parent may give the pre-paid card to a child who can use the card in emergency situations to contact a parent at a particular telephone number (e.g., at one of the
10 dedicated speed-dial numbers). A dedicated speed-dial type pre-paid card provided in accordance with the present invention will allow parents to rest assured that their children may reach them during times of need without requiring children to have money or some other
15 means of making a telephone call.

As such, in accordance with the present invention, provided is a system and a method for pre-programming a list of speed-dial telephone numbers associated with a dedicated speed-dial pre-paid
20 telephone calling card and for facilitating use of the same. The system and method include and involve a data storage system for storing a card identifier corresponding to a pre-paid telephone calling card, a list of speed-dial telephone numbers for use in
25 conjunction with the pre-paid telephone calling card, and a security code for limiting access to the list of speed dial telephone numbers. A pre-paid telephone calling card processing system coupled to the data storage system is configured to receive the card
30 identifier and a request to maintain the list of speed-dial telephone numbers during a call to the pre-paid telephone calling card processing system via a telephone network. The request includes a security word which will be compared to the security code. If

the security word matches the security code stored in the data storage system, the pre-paid telephone calling card processing system will permit the list of speed-dial telephone numbers to be affected (e.g., added to, changed, etc.). The pre-paid telephone calling card processing system will permit users to initiate speed-dial only telephone calls in accordance with pre-programmed telephone numbers stored in relation to their particular dedicated speed-dial pre-paid telephone calling cards.

The present invention is described in detail below with reference to the following drawing figures, of which:

FIG. 1 is a system diagram in which pre-paid telephone calling cards may be associated with dedicated speed-dial telephone numbers in accordance with the present invention;

FIG. 2 is an exemplary data structure diagram corresponding to a data structure that may be used within the system illustrated in FIG. 1 to facilitate the provisioning and use of dedicated speed-dial pre-paid telephone calling cards in accordance with a preferred embodiment of the present invention;

FIG. 3A is a processing and call flow diagram that illustrates the operations performed within system 100 to maintain a list of speed-dial telephone numbers in accordance with the preferred embodiment of the present invention;

FIG. 3B is a continuation processing and call flow diagram of the processing and call flow diagram started in FIG. 3A;

FIG. 3C is a continuation processing and call flow diagram of the processing and call flow diagram started in FIGS. 3A and 3B;

FIG. 3D is a continuation processing and call flow diagram of the call flow diagram of the processing and call flow diagram started in FIGS. 3A-3C;

FIG. 3E is a conclusion processing and call flow diagram of the processing and call flow diagram started in FIGS. 3A-3D;

FIG. 4A is a processing and call flow diagram that illustrates the use of a dedicated speed-dial pre-paid telephone calling card in accordance with the preferred embodiment of the present invention;

FIG. 4B is a continuation processing and call flow diagram of the processing and call flow diagram started in FIG. 4A;

FIG. 4C is a continuation processing and call flow diagram of the processing and call flow diagram started in FIGS. 4A and 4B;

FIG. 4D is a continuation processing and call flow diagram of the processing and call flow diagram started in FIGS. 4A-4C; and

FIG. 4E contains conclusion processing and call flow diagrams related to the processing and call flow diagram started in FIGS. 4A-4D.

The present invention is now discussed in detail with reference to the drawing figures that were briefly described above. An overview section is followed by a discussion of the structural aspects of the present invention and a discussion of corresponding data and call flows. Unless otherwise indicated, like parts, systems, and processes are referred to with like reference numerals.

OVERVIEW

The present invention is concerned with providing systems and methods that may be used to provide enhanced pre-paid card services and features.

Such enhanced services and features include and involve systems and methods that are provided by the present invention to deliver pre-paid cards having associated and dedicated speed-dial lists. With such enhanced pre-paid cards and related services, people will be able to pre-program speed-dial lists and then give corresponding pre-paid cards to children, for example, who can use the same to initiate an outbound call to a particular telephone number maintained on a speed-dial list. That is, the present invention will allow data stored in relation to a particular pre-paid card to include a dedicated list of speed-dial telephone numbers to which telephone calls may be made. As such, the present invention provides a new pre-paid card that may be purchased by a parent, for example, pre-programmed with dedicated speed-dial only telephone numbers, and then given to a child for use in emergencies and other critical call situations.

To facilitate the provisioning of a pre-paid card that only may be used with a pre-programmed list of speed-dial telephone numbers (i.e., a speed-dial only pre-paid card) the present invention includes two phases of operation that are discussed in detail below with regard to FIGS. 1, 2, 3A-3E and 4-4E, respectively. A first phase involves pre-paid card activation and setup, while a second phase includes card use. The first phase, pre-paid card activation and setup, involves the actions of a seller of pre-paid cards in conjunction with the actions of a service provider who is responsible for managing systems to support such pre-paid card use. Pre-paid card setup involves the actions of a card purchaser, for example, who is now able to pre-program and maintain a list of speed-dial telephone numbers for use by a card user

(e.g., a child, etc.). The pre-programmed list of speed-dial telephone numbers may be accessed by a parent, for example, for maintenance thereof (e.g., addition and deletion of speed-dial only telephone numbers, etc.) during a corresponding maintenance call to a pre-paid telephone calling card processing system.

The aforementioned second phase, card use, may involve the actions of another party (e.g., a card user such as a child of say 8-16 years of age) who intends to make a critical or other telephone call through use of a speed-dial only pre-paid card. A card user now may initiate an outbound call to a selected telephone number that has been pre-programmed by a parent, for example. The pre-programmed list of speed-dial only telephone numbers may be accessed by a child, for example, to initiate an outbound call to a number on the pre-programmed list during an access telephone call via a telephone network (e.g., a toll-free access call to a pre-paid telephone calling card processing system, etc.). In accordance with the present invention, it is preferable to allow an outbound telephone call to be initiated only to a telephone number maintained on the pre-programmed list of speed-dial telephone numbers. Accordingly, the present invention provides a pre-paid telephone calling card that may be used by a child in emergency and other critical call situations without requiring the child to have other means (e.g., money or change, a general use calling card, etc.) to make an important telephone call home, etc..

STRUCTURAL ASPECTS OF THE PRESENT INVENTION

The structural aspects of the present invention are described with particular reference to FIG. 1. Depicted in FIG. 1 is a system which supports enhanced pre-paid cards such as those that may be set up to have

dedicated speed-dial telephone number lists in accordance with the present invention. In particular, system 100 includes a calling party (e.g., having a corresponding telephone number 301-993-1234), a called party (e.g., having a corresponding telephone number 972-918-1244), the publicly switched telephone network (PSTN) 102, a pre-paid telephone calling card for processing system 104 such as one including at least one intelligent (IN) platform having at least one service data point (SDP) 106, at least one service switching control point (SSCP) 108, and a customer service center 110 which may be attended by live operators. In FIG. 1, calling party (e.g., a card purchaser, card user, etc.) may use a prepaid card 120 to obtain enhanced pre-paid telephone calling card services in accordance with the present invention (e.g., the maintenance of a pre-programmed speed-dial list of telephone numbers and the initiation of an outbound call to a particular telephone number selected from the speed-dial list of telephone numbers).

Also included within pre-paid telephone calling card processing system 104 is one or more voice response systems 107 which may be used to automatically voice prompts in accordance with the present invention via a telephone call over a telephone network such as the PSTN 102. The use of such voice response systems will be readily apparent and understood by those skilled in the art. The use of a voice response system to facilitate voicing of digitally recorded voice prompts will be readily understood by those skilled in the art.

System 100 facilitates both card activation (e.g., by a retailer, etc.) and setup by a card purchaser (e.g., a parent, etc.), and card use by a

card user (e.g., a child, etc). A pre-paid calling card like pre-paid calling card 120 may be used to obtain speed-dial only telephone call service in accordance with the present invention.

5 As noted above, pre-paid telephone calling card processing system 104 is one that includes at least one intelligent network (IN) platform consisting of, among other things, SSCP 108 and SDP 106. As such, a card purchaser of pre-paid calling card 120 may access SSCP
10 108 via PSTN 102 (via a card setup/speed-dial list maintenance call) to affect data base records and data related to pre-paid card 120 in accordance with the present invention. In particular, a card purchaser (e.g., a parent) may setup and maintain pre-paid card
15 120 by pre-programming a list of speed-dial telephone numbers to which pre-paid card 120 only may be used to place a corresponding outbound pre-paid card telephone call. An outbound call made in accordance with the present invention may be initiated by a card user
20 (e.g., a child) by accessing pre-paid telephone calling card processing system 104 via an access call (e.g., a toll-free access call). During such an access call a card user may be prompted (e.g., via voice prompts, etc.) to enter a speed-dial identifier (e.g., a single
25 digit telephone keypad key such as keys 1-6) to immediately cause an outbound call to be initiated to a corresponding, pre-programmed telephone number.

 Data related to pre-paid card 120 may be stored in SDP 106. Such data may include card usage data such
30 as remaining minutes, unit billing rates, and, according to the present invention, speed-dial list data further including pre-programmed speed-dial telephone numbers (e.g., a particular number of speed-

dial numbers such as six, etc. numbers to which
outbound calls may be made automatically).

5 A card purchaser of pre-paid card 120 may cause
data related to pre-paid card 120 to be affected via a
live operator session handled through customer service
center 110. The facilities to support use of a
customer service center or call center to support pre-
paid cards will be readily apparent to those skilled in
the art.

10 Once pre-paid card 120 has been setup in
accordance with the present invention (e.g., a pre-
programmed list of speed-dial numbers has been assigned
or otherwise maintained, changed, etc.), a card user
(e.g., a child) may place a pre-paid telephone calling
15 card call by dialing a 1-800 access number and entering
an appropriate PIN/CARD ID number and a speed-dial
number identifier (e.g., a single digit key entry at a
telephone keypad, etc.) to initiate a corresponding
outbound call.

20 For example, an outbound call in accordance
with the present invention may be made to a pre-
programmed telephone number such as one to a called
party (e.g., a child's parent, grandparent, etc.)
having the telephone terminal station identifier or
25 telephone number of 972-918-1244.

In FIG. 1, pre-paid card 120 is a pre-paid
telephone calling card similar or like one
manufactured and/or marketed by MCI WORLDCOM, Inc. In
accordance with the present invention, dedicated and
30 pre-programmed speed-dial telephone numbers and/or
corresponding labels for the same (e.g., "HOME,"
"GRANDPARENTS," etc.) may be written or otherwise
placed on pre-paid card 120 to facilitate pre-
programming and use of the same. Accordingly, a child,

for example, can easily see the label associated with a particular speed-dial identifier or pre-paid telephone number, be comforted thereby, and assured that he is accessing an appropriate telephone number and making an appropriate telephone call, especially during a critical call situation.

Referring now to FIG. 2, depicted therein is a data structure such as a table data structure that may be stored and maintained within SDP 106 (FIG. 1). In particular, data structure 200 is organized to have columns and rows. The columns of data structure 200 contain fielded data such as a CARD ID, a SPEED DIAL SECURITY CODE, a SPEED DIAL LIST, CARD USAGE DATA, REMAINING UNITS, CARD EXPIRATION DATE, and other data that may be included within data structure 200 as indicated by the ellipses, to suit particular design requirements and to illustrate that data structure 200 is not limited or constrained by the columns/fields included therein. In data structure 200, a row of data corresponding to a particular pre-paid calling card, such as pre-paid calling card 120 (FIG.1) is maintained.

In particular, row R1 of data structure 200 contains data corresponding to a particular pre-paid calling card such as pre-paid calling card 120 (FIG.1) in accordance with the present invention. That is, row R1 includes a CARD ID of 446-223-3748, a SPEED DIAL SECURITY CODE number of 1234, a SPEED DIAL LIST OF speed dial telephone numbers such as 1301-555-1234, through 6301-555-1239, CARD USAGE DATA such as last use and last call duration data, a remaining number of units related to pre-paid calling card 120, a card expiration date such as January 10, 2002, and other

fielded data contained within row R1 of data structure 200 as indicated by the field containing ellipses.

The leading digit of the speed-dial telephone numbers identified in FIG. 2 (e.g., 63015551239, etc.) is intended to illustrate a speed-dial telephone number identifier (e.g., a single digit identifier) that may be used to reference and access a corresponding speed-dial telephone number for maintenance (e.g., addition, change, etc.) and use of the same. Other approaches toward providing such identification may be used and are not to be limited by the exemplary arrangement shown in FIG. 2 and discussed herein.

Row R2 of data structure 200 contains ellipses to illustrate the fact that data structure 200 may include many records and data related to numerous pre-paid calling cards in accordance with the present invention.

Phase 1 - PRE-PAID CARD ACTIVATION AND SETUP

The structural aspects of the present invention as described above and as shown in FIGS. 1 and 2, are designed to operate together to facilitate to the phases of operation that were discussed in the **OVERVIEW** section hereof. In particular, the structures depicted in FIGS. 1 and 2 which make up system 100 are configured to support both pre-paid card activation and set-up as a first phase and card use as a second phase. Pre-paid card activation involves the operations related to data stored for pre-paid card 120 in SDP 106 (FIG.1). Such activation operations are intended to place a pre-paid card like pre-paid card 120 into an active, ready-for use state, (e.g., ready for telephone services to be used in relation thereto). Pre-paid

card activation may occur via point-of-sale operations, live-operator telephone sessions, etc.

After pre-paid card 120 has been activated as described above, the card may be setup in accordance with the present invention. In particular, a pre-paid card may be setup by a parent, for example, by causing a list of speed-dial only telephone numbers to be pre-programmed and/or maintained such as within a data structure maintained within and/or by SDP 106 similar or like data structure 200 (FIG. 2). Upon use in accordance with a use (second) phase related to the present invention, a caller may initiate an outbound call to a speed-dial telephone number (and only to a pre-programmed speed-dial telephone number) after appropriate selection of the same by a card user (e.g., a child, etc.).

The operations and call flows within a system like or similar to system 100 (FIG. 1) to bring about pre-paid card setup and, in particular, speed-dial list management in accordance with the present invention are illustrated in FIGS. 3A-3E. Such operations are self-explanatory, but are discussed herein to further illustrate the novel aspects of the operations that may occur within the present invention.

It is envisioned that within the call flows illustrated in FIGS. 3A-3E, as discussed below, a caller such as a parent may access pre-paid telephone calling card processing system 104 and, in particular, SSCP 108 thereof via a maintenance call (e.g., a telephone call) over a telephone network such as PSTN 102. During such a maintenance type call, the parent may elect to pre-program a SPEED-DIAL list to be used in conjunction with pre-paid calling 120. The term "maintenance" relates only to the features associated

with pre-paid card 120 and not to any particular attributes of a telephone call to pre-paid telephone calling process system 104 to perform list maintenance and/or management by a card purchaser (e.g., a parent, etc.).

Referring now to FIG. 3A, depicted therein are card setup call flows, and, in particular, ones that support pre-programming of automatic speed-dial lists in accordance with the present invention. In particular, processing and call flow start at step S3-1 and may proceed to step S3-2 if language selection in a conventional way is to be included within such processing. The processing to bring about language selection and functionality as indicated at step S3-2 (in phantom lines) will be immediately understood by those skilled in the art.

Assuming an appropriate language is selected for prompting (e.g., automatic voice response prompting, such as by a voice response system 107 (FIG.1)), processing proceeds to step S3-3 where a caller will be prompted for an appropriate card identifier during a maintenance call to pre-paid telephone calling card processing system 104 (FIG. 1).

At step S3-4, the caller will enter a DTMF sequence corresponding to the card identifier (e.g., via his telephone device keypad). Such a card identifier may be a string of digits (e.g., ten digits, etc.) entered via a telephone device keypad, etc.. Alternatively, if pre-paid telephone calling card processing system 104 is so equipped, a card identifier may be entered by the caller in the form of spoken text which can be processed and recognized by a speaker-independent voice response system which will be readily understood by those skilled in the art. Next, at step

S3-5, the pre-paid telephone calling card processing system 104 will access SDP 106 and data contained therein which is related to a pre-paid card 120.

5 Next, at step S3-6, a determination will be made as to whether the caller entered a valid card identifier by comparing index structures for such card identifiers and that entered by the caller. If no match occurs, a looping construct may be initiated back to step S3-3 whereby the process will re-iterate for the caller to be prompted for a card identifier. Such a looping construct can be carried out a specified number of times (e.g., two times, etc.) and if a valid card identifier is ultimately not entered a release of the maintenance telephone call may occur, terminating such a call and returning a call port to an idle state. Such processing will be immediately understood by those skilled in the art.

10 If, at step S3-6 a valid card identifier was entered, processing and related call flow proceeds at the top of FIG. 3B. At step S3-7, the caller will be prompted to access a list maintenance menu (e.g., a "Parents Menu").

15 Next, at step S3-8, the caller may request the list maintenance menu by pressing an appropriate key on his telephone device keypad (e.g., by pressing the "3" key, etc). Such operation will cause a DTMF sequence to be processed by pre-paid telephone calling card processing system and, in particular, by SSCP 108.

20 Next, processing will proceed to step S3-9 where the caller will be prompted to enter a security code related to a particular pre-paid calling card such as pre-paid calling card 120 (e.g., a four digit PIN code, etc as illustrated in FIG. 2). It should be noted that the security code is envisioned to be

changeable like a security code used with electronic mail, internet access, a bank account, voicemail systems, and through automated and live-operator systems. Also, the security code may be entered by the caller, as with the card identifier discusses above, as a spoken voice statement that may be processed and recognized by a speaker independent voice response system which will be readily understood by those skilled in the art.

Next, at step S3-10 the caller will enter a security code via DTMF entry (e.g., telephone device keypad entry) and processing will proceed at the top of Fig. 3C.

At step S3-12, pre-paid telephone calling card processing system 104 will access SDP 106 and data related to pre-paid card 120. Next, at step S3-13, a determination will be made as to whether a valid security code has been entered by the caller by comparing data stored for pre-paid card 120 with the security code sequence entered by the caller. If not, processing will proceed back to step S3-11 as illustrated in FIG. 3B and a looping construct will thereby be created. Such a looping construct may be caused to iterate any number of times such as two times to allow the caller to enter a correct security code. If a correct security code cannot be or is not ultimately entered, a release of the maintenance call may occur by releasing a calling port on SSCP 108 to an idle state.

If, at step S3-13, a valid security code has been entered, processing proceeds to step S3-14 where the caller will be prompted to enter a DTMF code as a menu option such as "1" for customer service and "2" to update a pre-program list of speed dial telephone

numbers in accordance with the present invention.
Next, at step S3-15 a determination will be made as to whether the caller pressed the "1" key on his telephone device keypad. If not, processing will proceed at the top of FIG. 3D. If the caller did press a "1" key, processing will proceed at the top of FIG. 3D. If the caller did not press a "1" key, processing will proceed at the top of FIG. 3E for customer service operations.

Accordingly, at the top of FIG. 3D, and, in particular, at step S3-16 a determination will be made as to whether the caller pressed a "2" key on his telephone device keypad. If not, processing proceeds to step S3-17 where the caller will be prompted with an invalid entry notification and processing will proceed back to step S3-14 as illustrated in FIG. 3C as discussed above.

If the caller did press the "2" key on his telephone device keypad, processing proceeds to step S3-18 where a looping construct may be initiated. In particular, at step S3-18 the caller will be prompted to enter a speed dial list identifier such as 1 through 6 to listen or change a current telephone number associated therewith. Alternatively, the caller may press the star key to exit the looping construct initiated at step S3-18 which allows the caller to add and/or change current telephone numbers maintained within a speed dial list.

It is important to note that the speed dial list maintained within SDP 106, may ultimately be utilized through use of single digit operation speed dial list identifier such as the "1" key through the "6" key on a telephone device keypad. Accordingly, a calling party (e.g., a child, etc) may press a single digit key on his telephone device key pad to

automatically initiate a corresponding outbound call to a telephone number that has been pre-programmed for that particular keypress.

On entry of a star key on a telephone device keypad, the caller will be prompted, at step S3-19, with a thank-you greeting and the maintenance call will terminate accordingly. Processing then ends at step S3-20.

As noted above, if, at step S3-15, the caller seeks live operator customer service, processing proceeds at the top of FIG. 3E. At step S3-21, the maintenance call will be routed to a customer service center (e.g., customer service center 110) for live operator assistance, etc, to engage in customer service operations including, but not limited to, recharging related to the remaining minutes left for a particular pre-paid card such as pre-paid card 120. Such recharge operations will be understood by those skilled in the art to initiate processes to adjust (e.g., increase or decrease) the remaining number of call usage minutes that may be used in relation to a particular pre-paid calling card.

Phase 2 - PRE-PAID CARD USE

The aforementioned discussions related to FIGS. 3A-3E involved card activation (e.g., at a POS system etc.) and card setup by a card purchaser (e.g., a parent) in setting up and pre-programming a list of speed-dial telephone numbers that may be associated to and used with a particular pre-paid calling card such as pre-paid card 120. After a card purchaser pre-programs a speed-dial list, he may thereafter distribute the card to a recipient of his choice (e.g., to a child, etc.). Thereafter, a card user (e.g., a child, etc.) may access pre-paid telephone calling card

processing system 104 to initiate an outbound call to a telephone number maintained within the pre-programmed list of speed-dial telephone numbers (and only to one of those numbers).

5 The operations carried out within system 100 to facilitate such pre-paid card use by a card user are illustrated in the call flow diagrams shown in FIGS. 4A-4E to which reference is now made. In FIGS. 4A-4E, it is assumed that a caller (e.g., a child, etc.) has
10 placed a call to a pre-paid telephone calling card processing system such as system 104 (FIG. 1) such as via a toll free 1-800 call (over a telephony network) to initiate an outbound call to a particular speed-dial
15 telephone number maintained in a corresponding list of speed-dial only telephone numbers which have been pre-programmed and which are stored in a storage facility such as in SDP 106 (as illustrated in FIGS. 1 and 2). Such a call to a pre-paid telephone calling card
20 processing system is referred to below as an "access call" to distinguish it from the maintenance call discussed above with regard to the call flows illustrated in FIGS. 3A-3E. It should be noted, however, that the term "access call" (and "maintenance
25 call") are merely names that have no impact on the nature of telephone calls to pre-paid telephone calling card processing system 104 to initiate outbound
30 telephone calls to pre-programmed speed-dial telephone numbers (or to maintain a list of such numbers) in accordance with the present invention.

Referring now to FIG. 4A, depicted therein is a processing and call flow diagram related to the usage of a pre-paid card in accordance with the present invention. In particular, processing and call flow starts at step S4-1 and proceeds to step S4-2. At step

S4-2, a caller (e.g., a child) dials an access number (e.g., a 1-800 toll-free access number) corresponding to pre-paid card 120. Thereafter, at step S4-3, the caller is prompted by a voice response system such as voice response system 107 (FIG. 1) with a welcome message that is automatically voiced during the access call (e.g., "Thank You for using your speed-dial only pre-paid card, please press a speed-dial key to make a dedicated speed-dial call," etc.)

Next, a step S4-4, the caller is prompted to enter a card identifier corresponding to pre-paid card 120. It should be noted that if the caller fails to enter a card identifier or otherwise permits a time-out to occur, the caller's access call may be routed to a customer service center for live-operator assistance, routed to a voice response system for automated response and prompting (e.g., looping, etc.), dropped, or otherwise handled based on particular design requirements. Thereafter, processing proceeds at the top of FIG. 4B.

At step S4-5, the pre-paid calling card processing system 104 accesses SDP 106 and data related to pre-paid card 120. Next, at step S4-6, a determination will be made as to whether the card identifier entered by the caller from his telephone device keypad is valid based upon a comparison with data stored in SDP 106. If not, processing proceeds back to step S4-4 as illustrated in FIG. 4A and a looping construct is executed a particular number of times before a hang-up or release of the access call will occur. Such number of times may be set to any number such as 2, for example.

If, at step S4-6, a valid card identifier has been entered by the caller during the access call,

processing proceeds to step S4-8 where the caller will be prompted with a card usage menu and in particular will be prompted to press "1" to make a speed dial call (and to only make a speed dial call), "2" for help, or
5 "3" for a parents/list maintenance menu. Processing thereafter proceeds at the top of FIG. 4C..

At the top of FIG. 4C and in particular, at step S4-9, a determination will be made as to whether or not the caller pressed a "1" key on his telephone
10 device key pad, and if so, processing proceeds at the top of FIG. 4D and, in particular, at step S4-12.

At step S4-12, the caller will be prompted to enter a speed-dial identifier (e.g., 1-6, etc.) to which pre-paid telephone calling card processing system
15 104 will initiate an outbound call. Thereafter, at step S4-13, a determination will be made as to whether a valid speed dial telephone number identifier is assigned (e.g., has been pre-programmed by a parent to point to a particular telephone terminal station such
20 as a home telephone number, a cellular telephone number, a pager, a grandparents home telephone number, etc). If not, a looping construct may be initiated to loop any number of times (e.g., two times, etc) back to step S4-12 as described above.

If, at step S4-13 a valid speed-dial telephone number identifier was entered, processing proceeds to step S4-14. At step S4-14, pre-paid telephone calling card processing system 104 initiates a corresponding
25 outbound call based upon the speed dial number pre-programmed in the list maintained within SDP 106 (e.g.,
30 301-555-1234).

Since pre-paid card 120 may be configured to be used to initiate outbound calls to only particular telephone numbers (e.g., the telephone numbers stored

in a list in SDP 106, etc.), pre-paid card 120 may be purchased by a parent and given to a child for the stated purpose of emergency or other critical call use. As such, a parent can rest assured that his child, for example, may always have a way to reach and contact the parent without needing any other means for making an emergency telephone call. Additionally, such a speed-dial only type pre-paid card will avoid the risks of fraudulent use by strangers and the wrongful use by card users such as children who may otherwise use a general-use pre-paid card for calls other than an intended purpose (e.g., emergencies, critical call situations, etc.). Accordingly, a speed-dial only type pre-paid card according to the present invention may be physically attached (like a luggage tag) to a child's clothing, luggage, book-bag, purse, etc. to ensure that a child has ready-access to an instrument that will allow him or her to reach a parent in a critical call situation.

Processing ends at step S4-15.

Referring again to FIG. 4C, if at step S4-9 the caller did not enter a "1 " key to initiate an outbound call, and instead entered or pressed the "2" key on his telephone device keypad, as determined at step S4-10, processing proceeds to step S4-16 at the top of FIG. 4E.

At step S4-16, voiced help instructions will be manifested to the caller during the access call. Such help instructions may be in the form of pre-recorded and/or digitally recorded voice prompts to assist the caller in operating the features related to pre-paid card 120 in accordance with the present invention. Thereafter, processing may proceed back to step S4-8 and the entire call flow may be restarted accordingly.

Referring again to FIG. 4C, if the caller did not select either to initiate an outbound call to a particular speed dial telephone number or to receive help instructions, it may be determined at step S4-11, that the caller is a parent, for example, who intends to manage/maintain the list of speed-dial only telephone numbers maintained within SDP 106 for pre-paid card 120. Accordingly, at step S4-11, if the caller entered or pressed the "3" key on his telephone device keypad, processing will proceed to step S4-17 as illustrated in FIG. 4E. In particular, at step S4-17 processing as defined and illustrated in FIGS. 3A-3E as discussed above will commence to allow the caller to maintain and manage the pre-programmed speed dial telephone numbers for pre-paid card 120.

If, at step S4-11 the caller did not enter or press the "3" key on his telephone device keypad, processing will proceed to step S4-7 as described above, where the looping construct may be initiated upon an invalid entry of a menu option initiated at step S4-8. Such a looping construct may be carried out any number of times (e.g., 2 times) before a release operation occurs relative to the access call thereby leaving a call port on SSCP 108 in an idle state.

Thus, having fully described the present invention by way of example with reference to attached drawing figures, it will be readily appreciated that many changes and modifications may be made to the invention and to any of the exemplary embodiments shown and/or described herein without departing from the spirit or scope of the invention, which is defined in the appended claims.

CLAIMS

WHAT IS CLAIMED IS:

1. A system for pre-programming a list of speed-dial
5 telephone numbers associated with a dedicated speed-dial pre-paid telephone calling card, comprising:

a data storage system for storing a card identifier
corresponding to a pre-paid telephone calling card, a
list of speed-dial telephone numbers for use in
10 conjunction with said pre-paid telephone calling card,
and a security code for limiting access to said list of
speed-dial telephone numbers; and

a pre-paid telephone calling card processing system
coupled to said data storage system and configured to
15 receive said card identifier and a request to maintain
said list of speed-dial telephone numbers during a call
to said pre-paid telephone calling card processing
system via a telephone network, said request including
a security word, said pre-paid telephone calling card
20 processing system further configured to cause said list
to be affected in accordance with said request when
said security word matches said security code stored in
said data storage system.

2. The system according to claim 1, wherein said list
25 of speed-dial telephone numbers includes a plurality of
telephone numbers to which outbound telephone calls may
be initiated automatically by said pre-paid telephone
calling card processing system.

3. The system according to claim 1, wherein said
30 request includes a set of dialed digits entered during
said telephone call.

4. The system according to claim 1, wherein said security code is a four digit PIN code.

5 5. The system according to claim 1, wherein said data storage system and said pre-paid calling card processing system are located in separate locations.

10 6. The system according to claim 1, wherein said data storage system is operative to store data related to the use of said prepaid telephone calling card, said data including a quantity corresponding to a number of service units available to be used to make at least one call to a speed-dial telephone number stored in said list of speed-dial telephone numbers.

15 7. The system according to claim 1, wherein said affect on said list of speed-dial telephone numbers is the addition of at least one speed-dial telephone number to said list of speed-dial telephone numbers.

20 8. The system according to claim 1, wherein said affect on said list is a change of at least one speed-dial telephone number stored in said list of speed-dial telephone numbers.

25 9. The system according to claim 1, wherein each speed-dial telephone number stored in said list of speed-dial telephone numbers is associated with a single digit speed-dial telephone number identifier, said single digit speed-dial telephone number identifier being operative to allow said each speed-dial telephone number to be affected in accordance with said request.

30

10. A method for pre-programming a list of speed-dial telephone numbers associated with a dedicated speed-dial pre-paid telephone calling card, comprising the steps of:

5 storing a card identifier corresponding to a pre-paid telephone calling card, a list of speed-dial telephone numbers for use in conjunction with said pre-paid telephone calling card, and a security code for use in limiting access to said list of speed-dial
10 telephone numbers;

receiving said card identifier and a request to maintain said list of list of speed-dial telephone numbers, said request including a security word; and

causing said list of speed-dial telephone numbers to
15 be affected in accordance with said request when said security word matches said security code.

11. The method according to claim 10, wherein said list of speed dial telephone numbers includes a
20 plurality of telephone numbers to which outbound telephone calls may be initiated in relation to said pre-paid telephone calling card.

12. The method according to claim 10, wherein said
25 request includes a set of dialed digits entered during said telephone call.

13. The method according to claim 10, wherein said
30 security code is a four digit PIN code.

14. The method according to claim 10, wherein said storing and receiving steps are performed at separate locations.

15. The method according to claim 10, wherein said storing step further includes a step of storing data related to the use of said pre-paid telephone calling card, said data including a quantity corresponding to a number of service units available to be used to make at least one call to a speed-dial telephone number stored in said list of speed-dial telephone numbers.

16. The method according to claim 10, wherein said affect on said list of speed-dial telephone numbers is the addition of at least one speed-dial telephone number to said list of speed-dial telephone numbers.

17. The method according to claim 10, wherein said affect on said list is a change of at least one speed-dial telephone number stored in said list of speed-dial telephone numbers.

18. The method according to claim 10, wherein each speed-dial telephone number stored in said list of speed-dial telephone numbers is associated with a single digit speed-dial telephone number identifier, said single digit speed-dial telephone number identifier being operative to allow said each speed-dial telephone number to be affected in accordance with said request.

19. A method of using a dedicated speed-dial pre-paid telephone calling card, comprising the steps of:

accessing a pre-paid telephone calling card processing system during a pre-paid telephone calling card setup call to said pre-paid telephone calling card processing system via a telephone network;

entering a card identifier corresponding to data addressable by said pre-paid telephone calling card processing system, said data including a list of speed-dial telephone numbers for use in conjunction with said pre-paid telephone calling card and a security code for use in limiting access to said list of speed-dial telephone numbers;

entering a request to access and affect said list of speed dial telephone numbers, said request including a security word; and

obtaining access to affect said list of speed-dial telephone numbers when said security word matches said security code.

20. The method according to claim 19, wherein said list of speed dial telephone numbers includes at least one speed-dial telephone number to which an outbound call may be initiated by said pre-paid telephone calling card processing system.

21. The method according to claim 19, wherein said affect is the addition of at least one speed-dial telephone number to said list of speed-dial telephone numbers.

22. The method according to claim 19, wherein said affect is a change to at least one speed-dial telephone number stored in said list of speed-dial telephone numbers.

23. A system for facilitating the use of a dedicated speed-dial pre-paid telephone calling card, comprising:
a data storage system storing a card identifier corresponding to a pre-paid telephone calling card, and

a list of pre-programmed and dedicated speed-dial telephone numbers for use in conjunction with said pre-paid telephone calling card; and

5 a pre-paid telephone calling card processing system coupled to said data storage system and configured to receive an access call from a caller via a telephone network, to immediately prompt said caller to enter a card identifier and a speed-dial telephone number
10 number identifier, and to receive said speed-dial telephone number identifier during said access call, said pre-paid telephone calling card processing system automatically initiating an outbound telephone call to a particular pre-programmed and dedicated speed-dial telephone number based on said speed-dial telephone
15 number identifier.

24. The system according to claim 23, wherein said speed-dial telephone number identifier is a single digit number corresponding to said particular speed-dial telephone number.
20

25. A method of using a pre-paid telephone calling card, comprising the steps of:

25 accessing a pre-paid telephone calling card processing system during a telephone service access call via a telephone network;

in response to a prompt immediately manifested after accessing step, entering a card identifier
30 corresponding to data addressable by said pre-paid telephone calling card processing system, said data including a list of pre-programmed, dedicated speed-dial telephone numbers and corresponding speed-dial telephone number identifiers;

entering a speed-dial telephone number identifier during said access call, to automatically cause said pre-paid telephone calling card processing system initiate an outbound telephone call via said telephone network to a particular speed-dial telephone number corresponding to said speed dial telephone number identifier.

26. The method according to claim 25, wherein said speed-dial telephone number identifiers are single-digit numbers that uniquely identify each corresponding pre-programmed, dedicated speed-dial telephone number.

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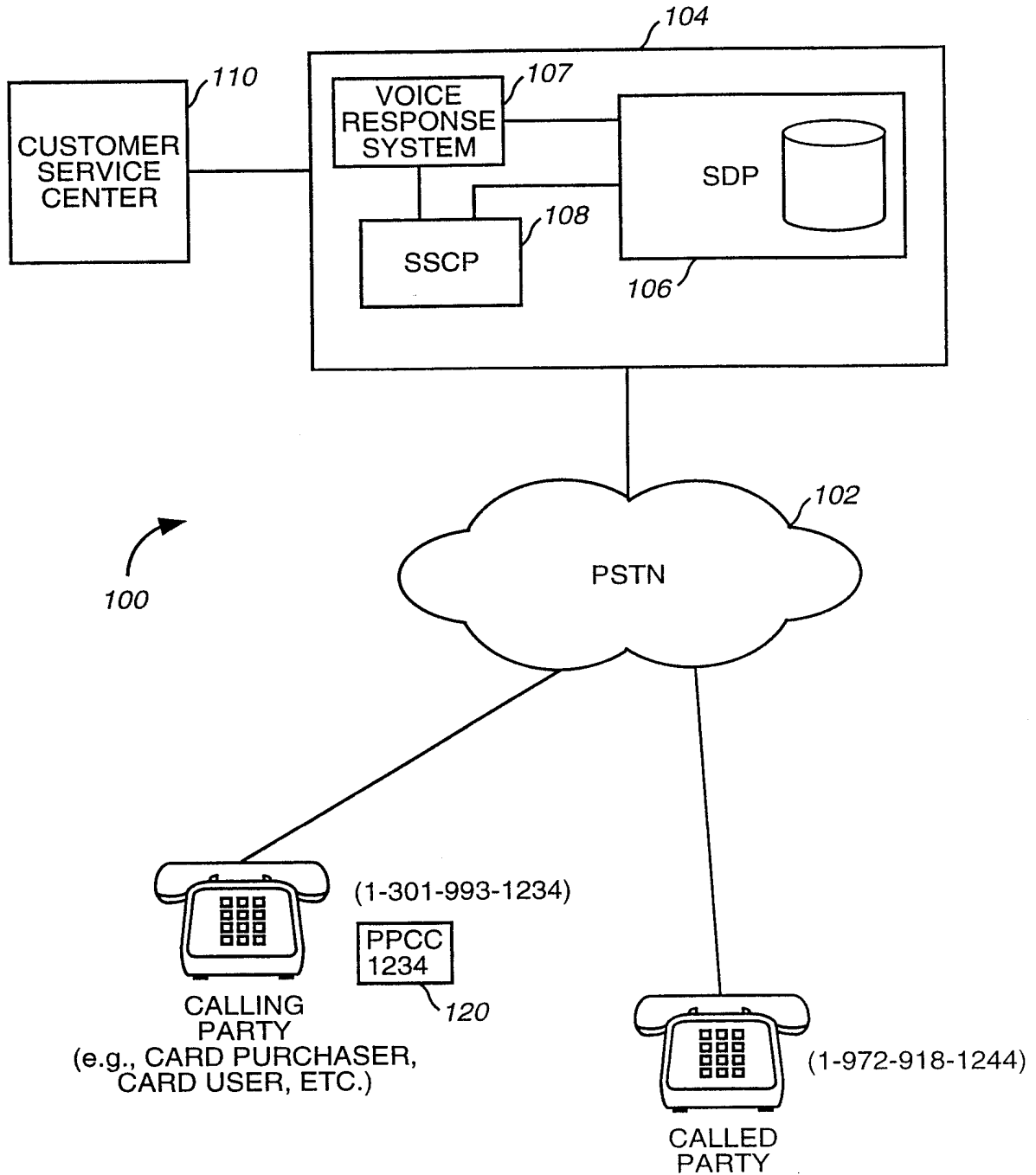


FIG. 1

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200

CARD ID	SD SECURITY CODE	SD LIST	CARD USAGE DATA	REMAINING UNITS	CARD EXPIRATION DATE	...
4462233748	1234	13015551234,23015551235,33015551236, 43015551237,53015551238,63015551239	LAST USE JUNE15, 1998, 9 MINUTE CALL	51 MINUTES REMAINING	01/01/2002	...
...

71

72

FIG. 2

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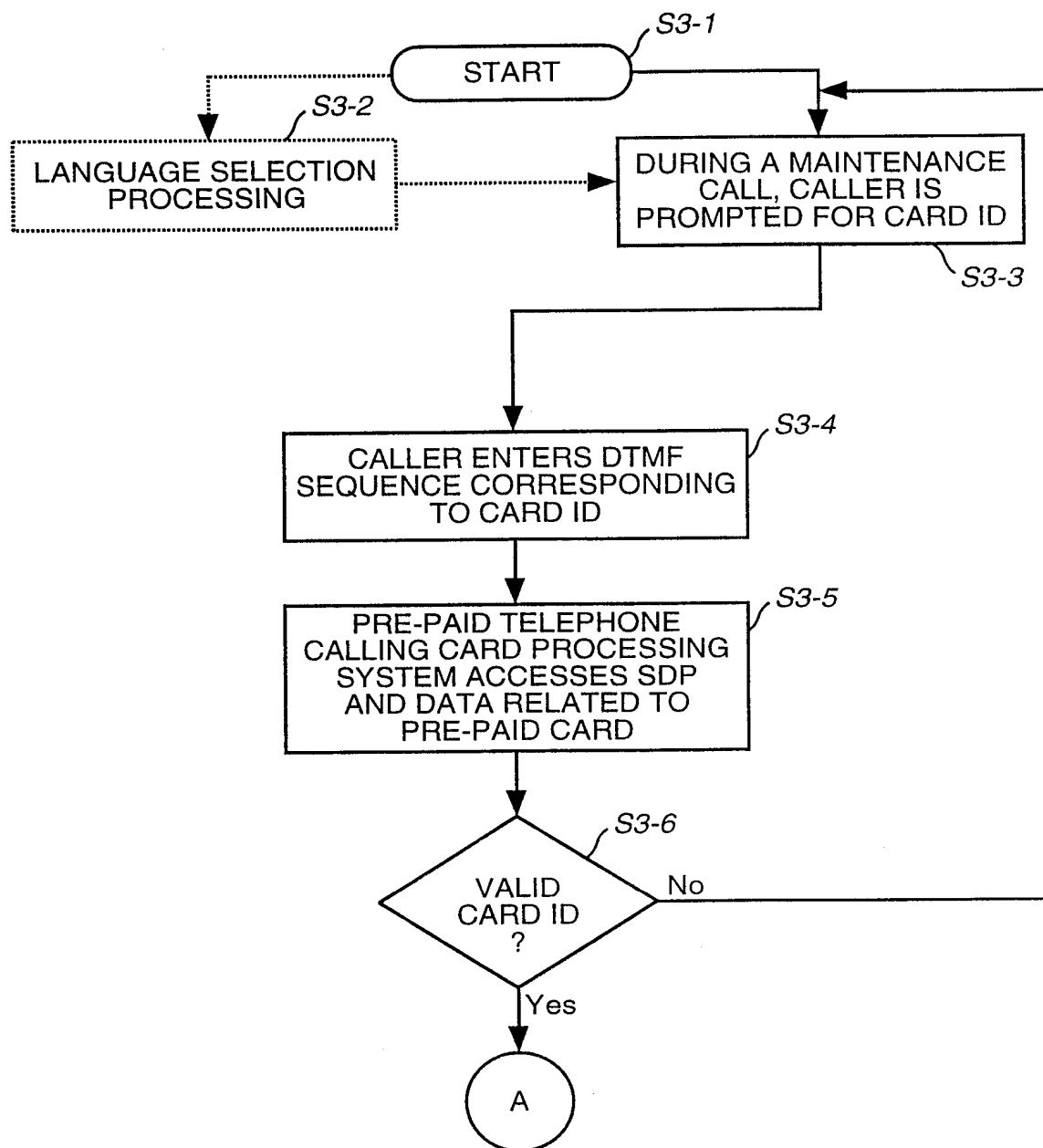


FIG. 3A

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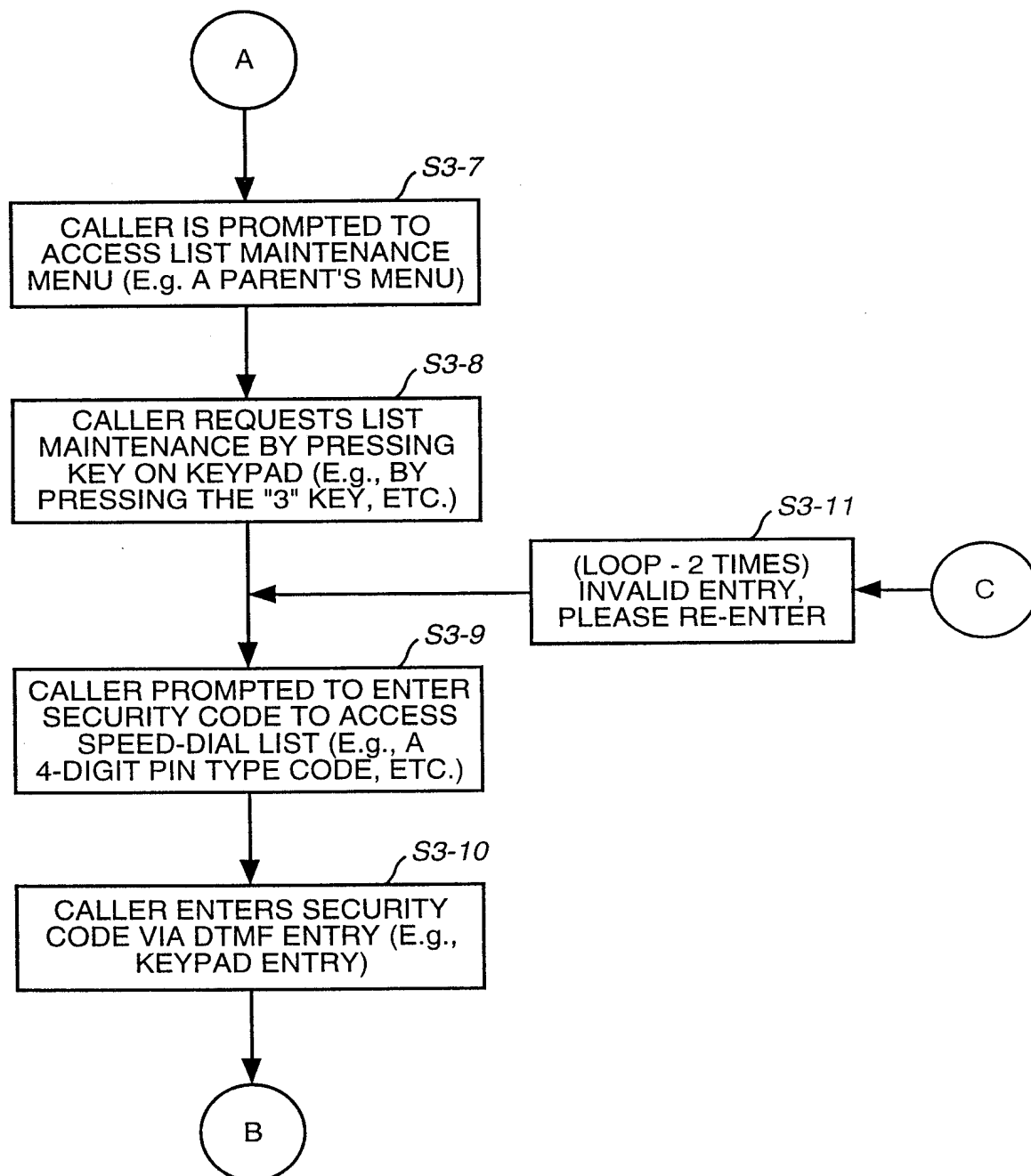


FIG. 3B

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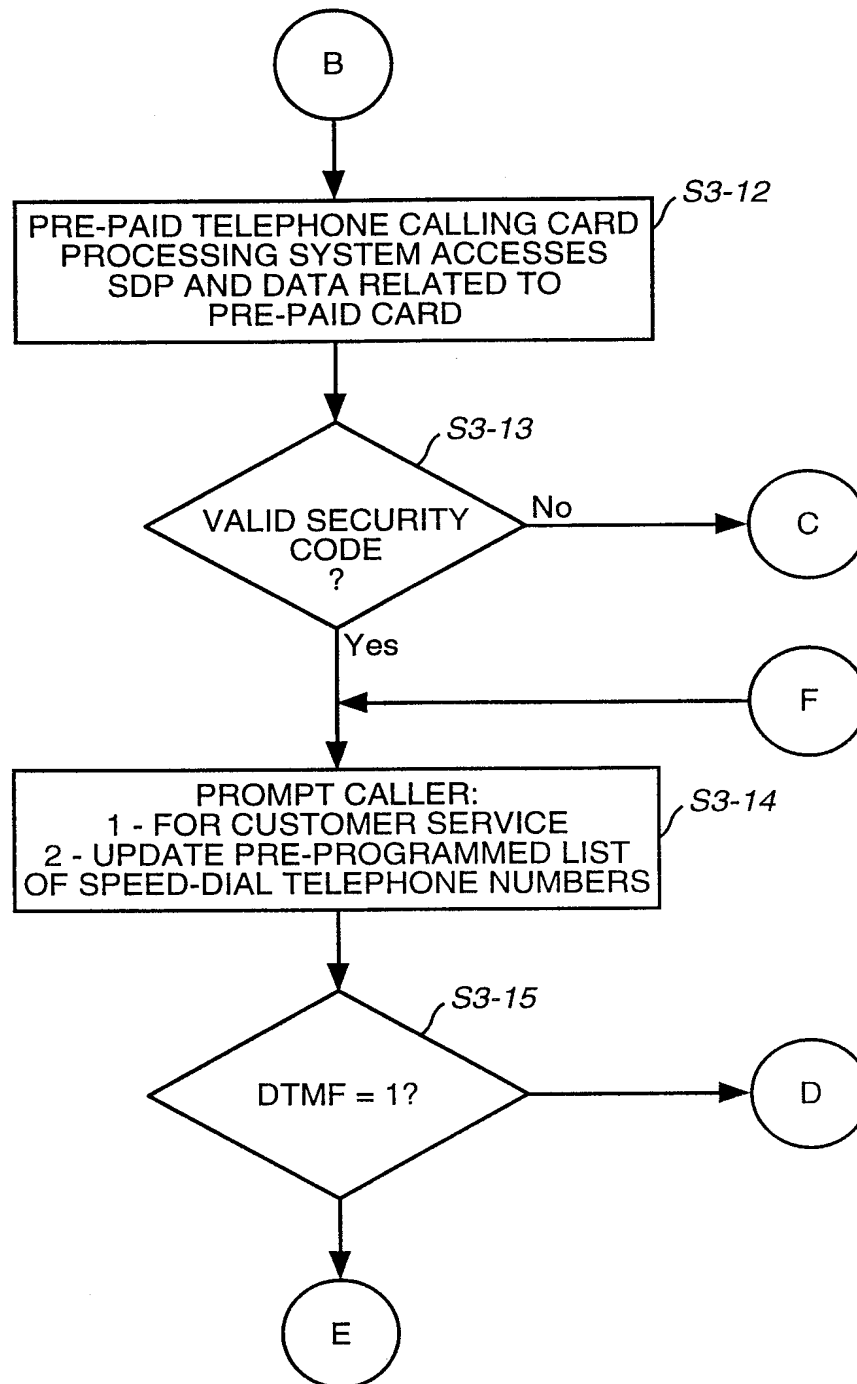


FIG. 3C

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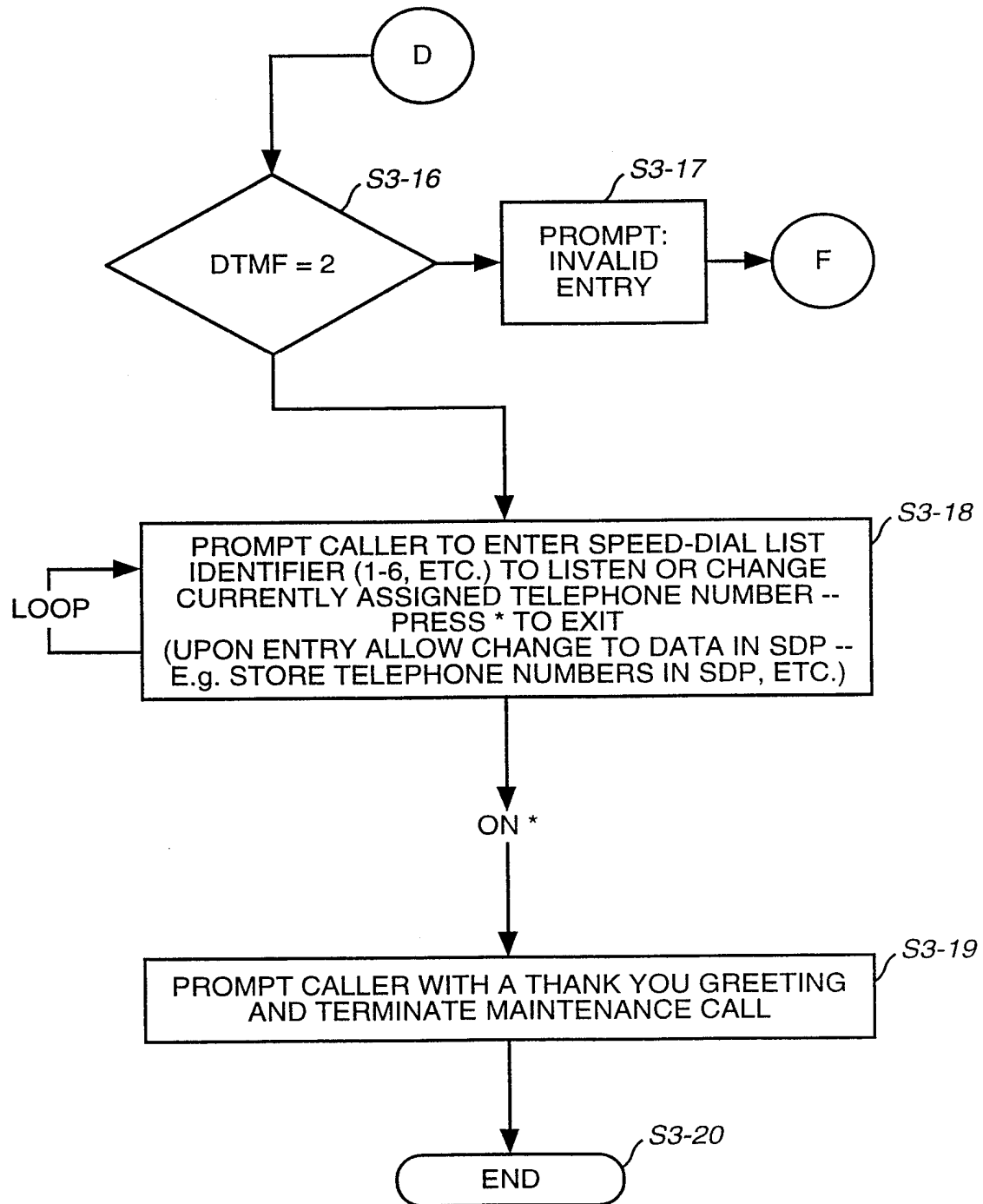


FIG. 3D

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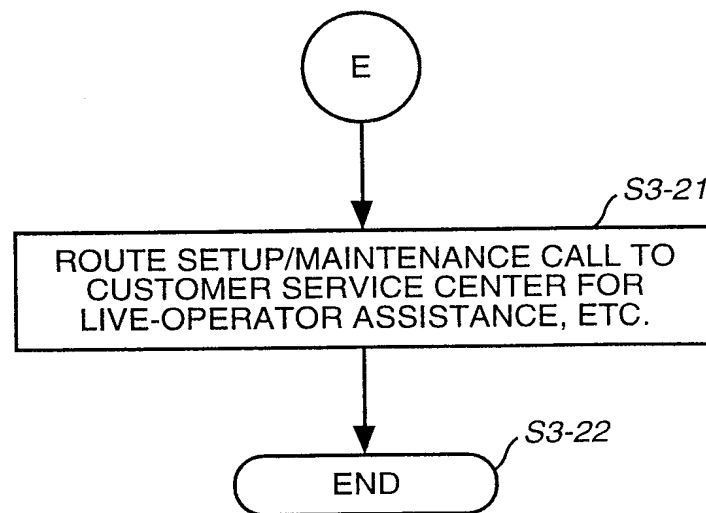


FIG. 3E

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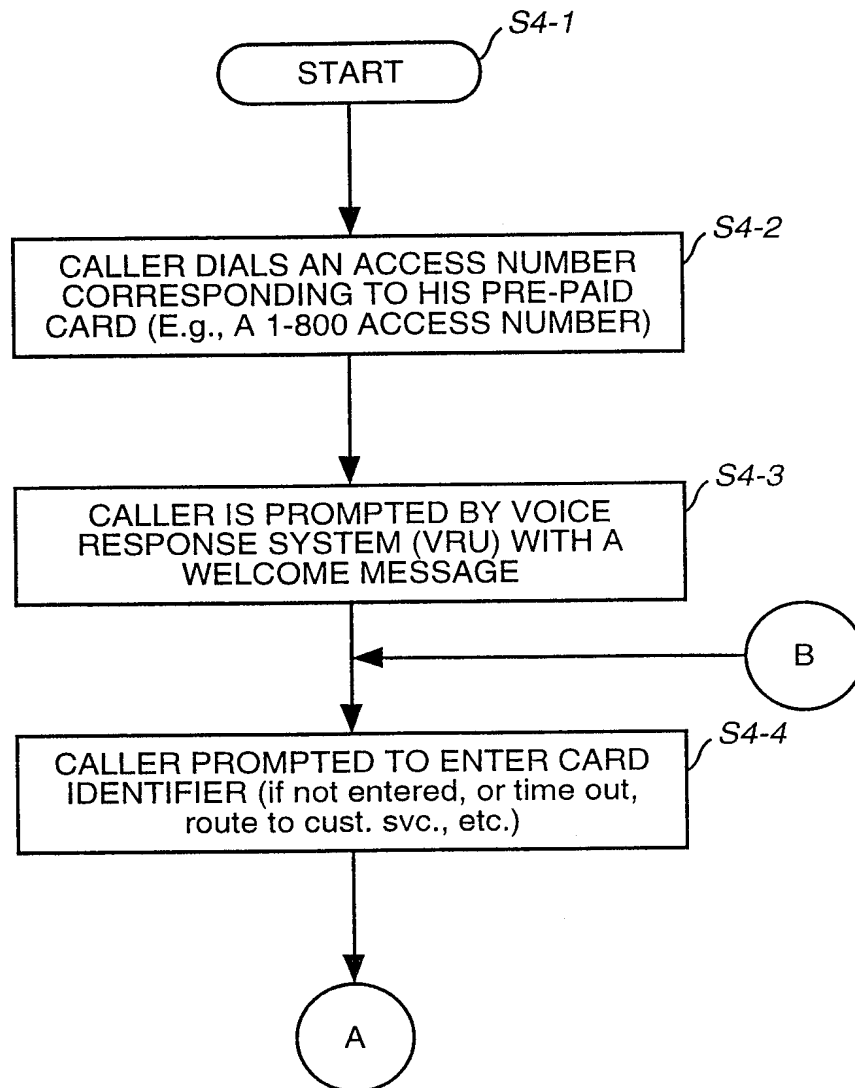


FIG. 4A

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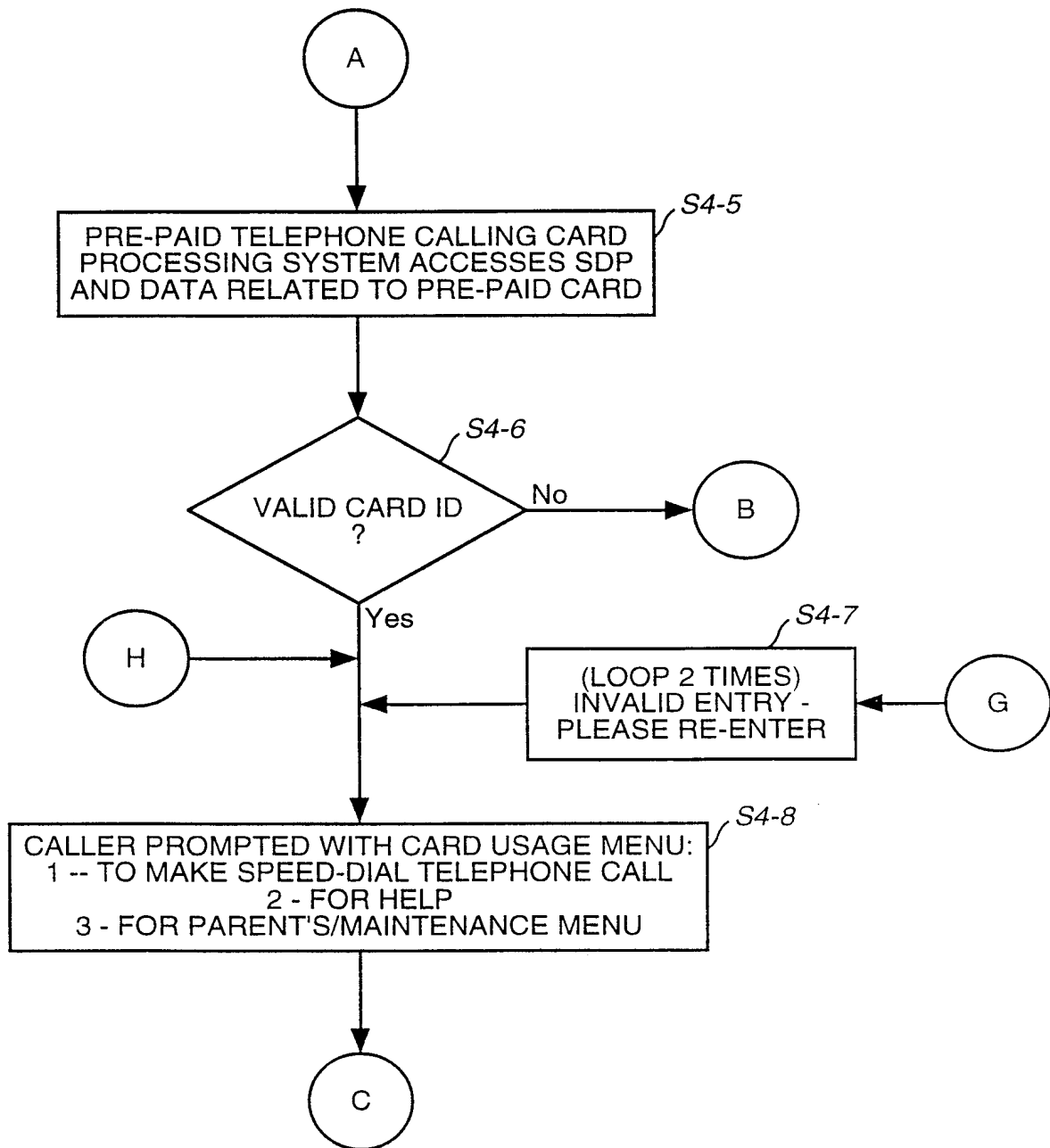


FIG. 4B

10/12

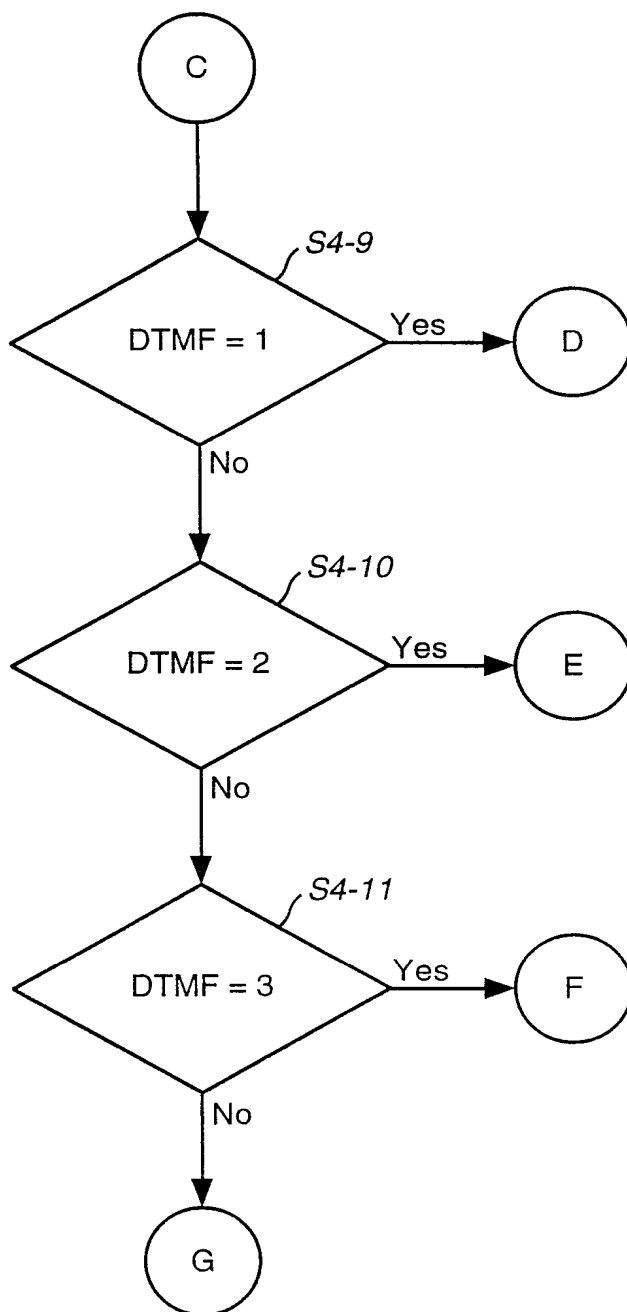


FIG. 4C

11/12

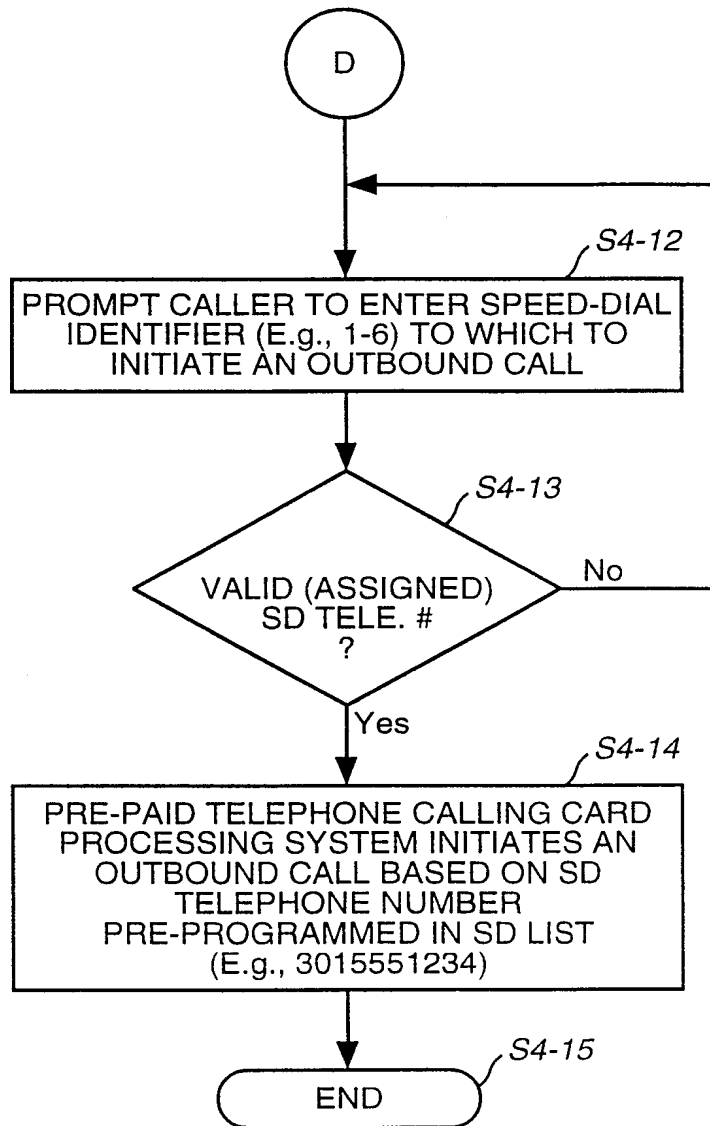
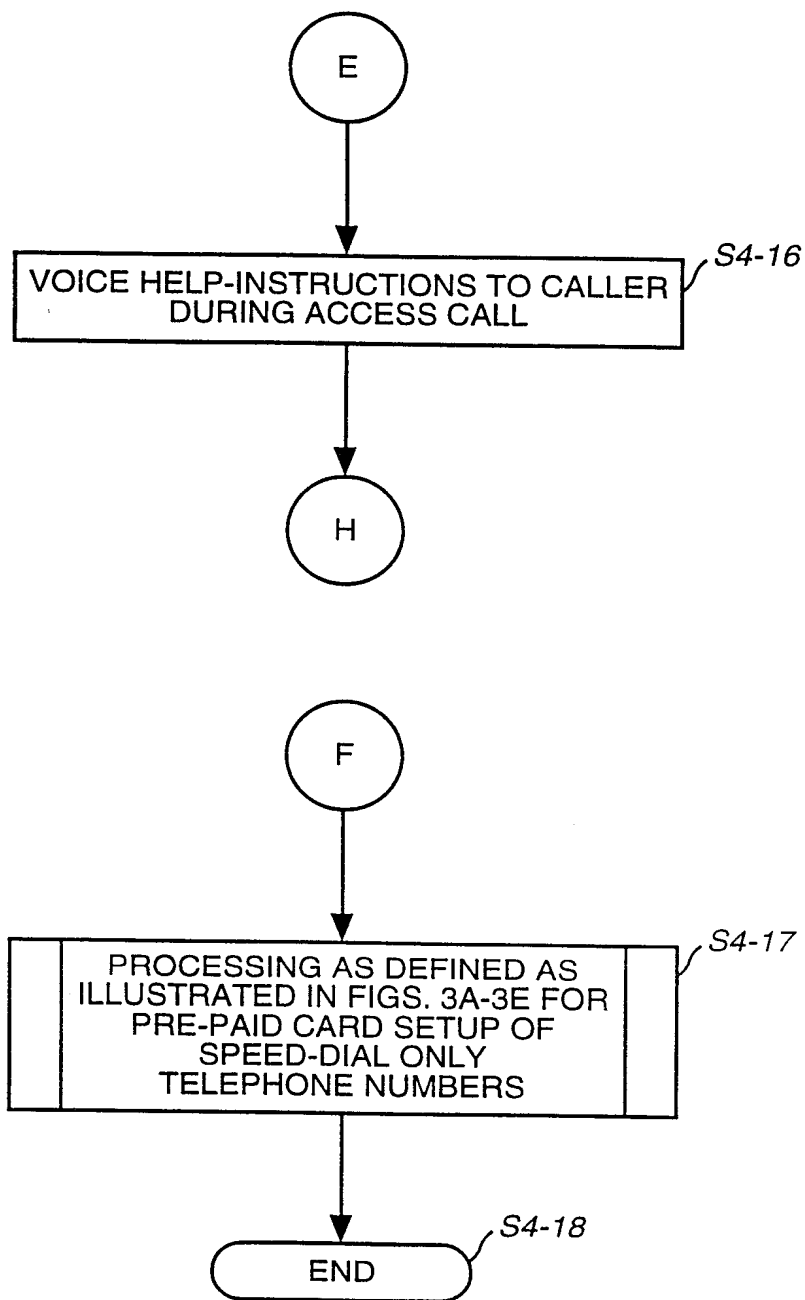


FIG. 4D

12/12

**FIG. 4E**

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/12163

A. CLASSIFICATION OF SUBJECT MATTER IPC(6) :H04M 15/00 US CL :379/144, 115, 127, 196, 216 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 379/144, 115, 127, 196, 216 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched none Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) none		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US 5,719,926 A (HILL) 17 February 1998, see col.2 lines 26-61; col.4 lines 5-7; col.7 lines 20-25.	1-26
Y,P	US 5,901,284 A (HAMDY-SWINK) 04 May 1999, see col.7 lines 29-31.	1-26
A,P	US 5,825,863 A (WALKER) 20 October 1998, see abstract.	1-26
A,P	US 5,859,897 A (FURMAN ET AL) 12 January 1999, see abstract.	1-26
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "Z" document member of the same patent family	
Date of the actual completion of the international search 09 AUGUST 1999		Date of mailing of the international search report 17 AUG 1999
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer PAUL LOOM <i>James R. Matthews</i> Telephone No. (703) 305-4766